



Effects of Weaning Strategy on Growth and Stress in Beef Calves

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Abstract

In a constant pursuit to add pounds of product to calves, the beef cattle industry is in need of a more effective and less stressful method of weaning calves. In order to analyze various weaning methods thirty-nine crossbred cow and calf pairs were evaluated to compare stress and performance between four treatment groups. The cows and calves were divided into the four separate groups based on the calf's body weight and the parity of the cow. The treatments include: anti-suckling device (day -4 to 0) followed by fence-line weaning (day 0 to 42; n = 10); anti-suckling device (day -4 to 0) followed by the abrupt removal of the calf from the cow (day 0 to 42; n = 10); no anti-suckling device (day -4 to 0) followed by fence-line weaning (day 0 to 42; n = 10); no anti-suckling device (day -4 to 0) followed by the abrupt removal of the calf from the cow (day 0 to 42; n = 9). All cows and calves, including those fitted with anti-suckling devices, remained together until weaning. At weaning (day 0), anti-suckling devices were removed, and the calves designated for fence-line weaning were placed in adjacent pastures to their cows; and abruptly weaned calves were placed in remote locations away from their cows. In order to assess the cows and calves average daily gain (ADG) they were weighed on days -4, -2, 0, 2, 4, 14, 28, and 42. On days the calves were weighed, temperament was assessed by measuring exit velocity. Exit velocity is calculated as the rate (m/s) when the cow or calf exited the squeeze chute and traveled a distance of 1.83 meters. In order to further assess the calves' activity level, pedometers were placed on an equal number of calves chosen at random in each treatment group. The data was analyzed using proc GLM of SAS. The average daily gain was not significantly different ($P > 0.05$) between the calves in different treatment groups. The serum cortisol concentrations do not show a significant difference ($P > .05$) between the treatment groups. However, exit velocity data shows a significant difference ($P < .05$) in calves that are traditionally weaned on days 2 and 4. Furthermore, data from the pedometers shows a significant difference ($P < .05$) between calves fitted with anti-suckling devices and those that were not. The pedometers show that calves that were not fitted with anti-suckling devices spent more time walking and pacing after weaning than calves fitted with the anti-suckling device prior to weaning. Data collected from this study implies that there is not an increase in calf performance when measured by average daily gain. However, exit velocity and activity level suggest that additional research is warranted to further investigate alternative weaning strategies.

Introduction

Traditionally, calves are abruptly separated from their cows at approximately 205 days of age to prevent the calf from nursing. This process is commonly known as weaning. Weaning is very stressful for calves not only because of the separation from their dam, but also because of the change in their diet. When calves are weaned stress may result in behavioral changes, such as increased vocalization, pacing, loss of appetite and thirst. Stresses due to weaning may result in a weakened immune system which increases the risk for infection and disease.

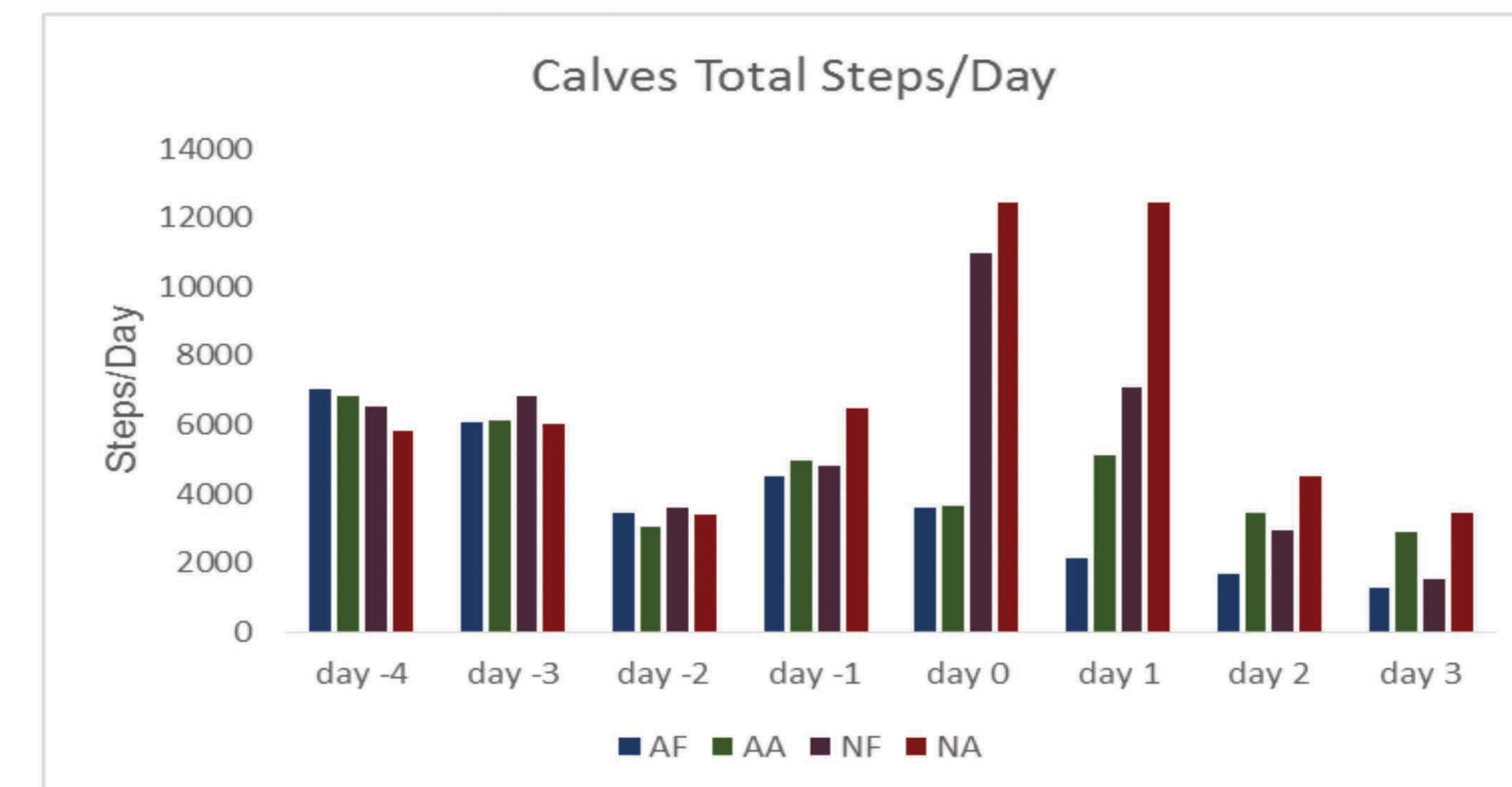
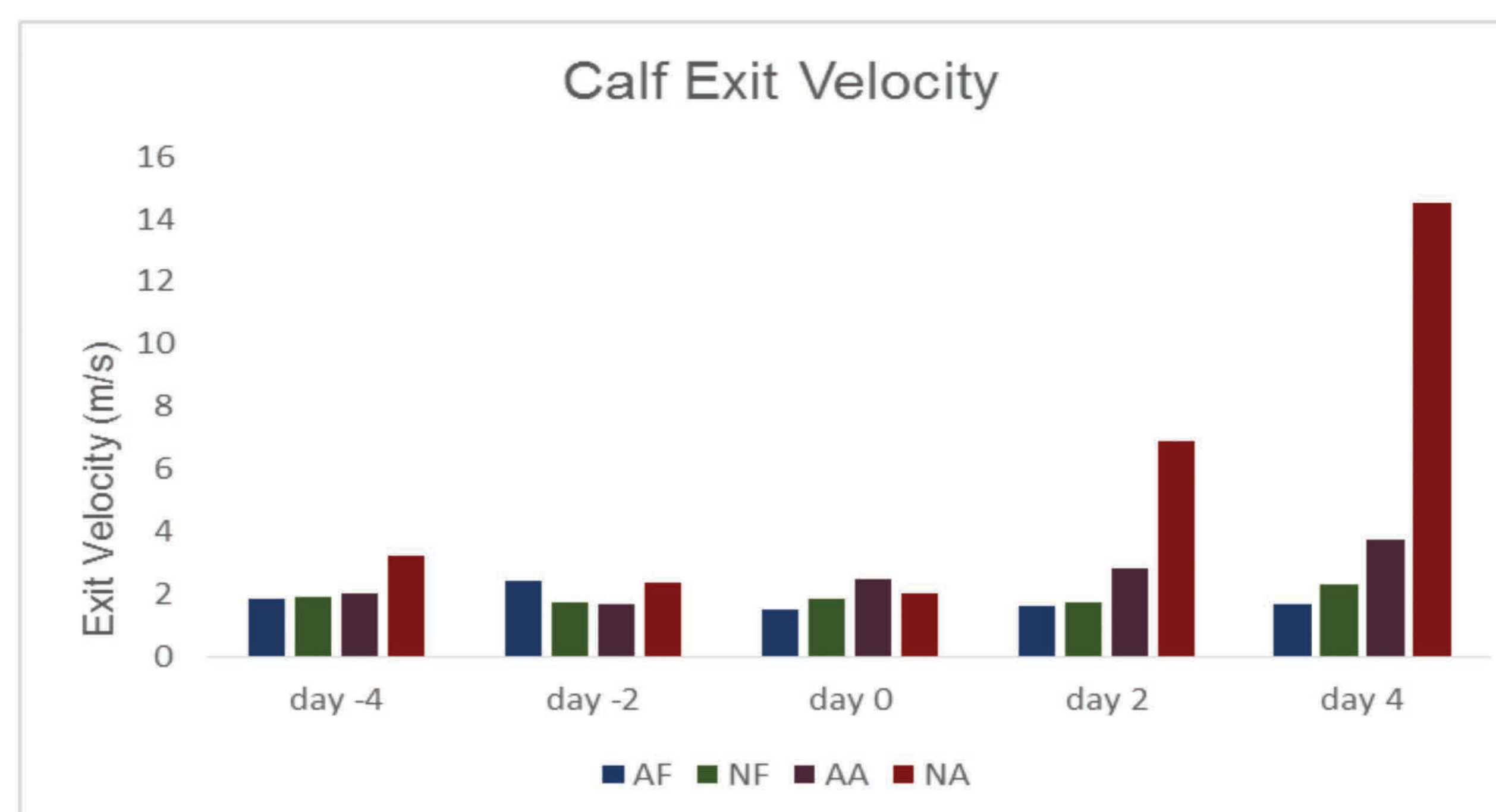
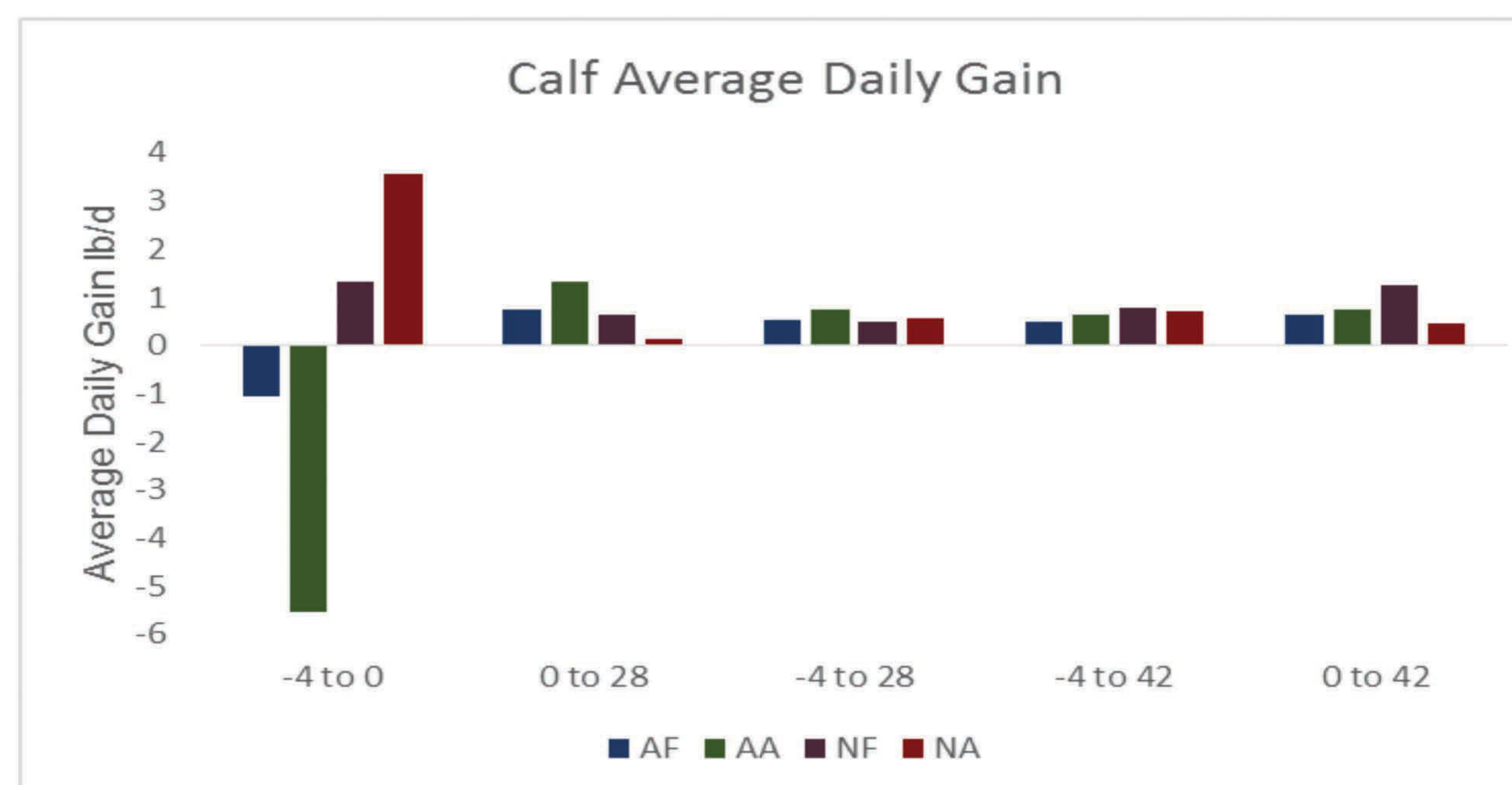
Objective

The objective of this study was to evaluate various weaning strategies in order to determine the best method to add pounds of gain on calves while minimizing stress and susceptibility to illness and disease.

Materials and Methods

- 39 cow and calf pairs were separated into treatment groups based on calf weight and cow parity.
- On days -4 to 0 anti-suckling devices were fitted to two groups of calves, an abrupt weaning group and a fence-line group.
- At weaning (day 0), anti-suckling devices were removed and the treatment groups were placed in secluded locations for abrupt weaning, and in adjacent pastures to their dam for fence-line weaning.
- Calves were weighed on days -4, -2, 0, 2, 4, 14, 28, 42 in order to assess average daily gain.
- On days the calves were weighed, temperament was assessed by measuring exit velocity. Exit velocity is calculated as the rate (m/s) when the cow or calf exited the squeeze chute and traveled a distance of 1.83 meters.
- In order to assess the calves' activity level, pedometers were placed on an equal number of calves chosen at random in each treatment group.
- The data was analyzed using proc GLM of SAS.

Results



AF = calves fitted with an anti-suckling device on day -4 to 0 and fence-line weaned
NF = calves not fitted with an anti-suckling device on day -4 to 0 and fence-line weaned
AA = calves fitted with an anti-suckling device on day -4 to 0 and abruptly weaned
NA = calves not fitted with an anti-suckling device on day -4 to 0 and abruptly weaned

Summary

- Average daily gain was not different between treatment groups.
- Calves weaned in a traditional method had an increased exit velocity compared to calves weaned traditionally.
- Calves fitted with anti-suckling devices prior to weaning had reduced activity levels after weaning compared to the other treatment groups.

Conclusion

Data collected from this study indicates that there is not an increase in calf performance when measured by average daily gain. However, exit velocity and activity level suggest that additional research is warranted to further investigate alternative weaning strategies.

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